

Wildfire Smoke

A Guide for Public Health Officials

Revised July 2008

(With 2012 AQI Values)



Table 2 Health Effects and Cautionary Statements ¹

Category (see Table 3)	Health Effects	Cautionary Statements ¹	Other Protective Actions
Good	None expected	None	None
Moderate	Possible aggravation of heart or lung disease	<p>Unusually sensitive individuals should consider limiting prolonged or heavy exertion.</p> <ul style="list-style-type: none"> ▪ People with heart or lung disease should pay attention to symptoms. ▪ If you have symptoms of lung or heart disease, including repeated coughing, shortness of breath or difficulty breathing, wheezing, chest tightness or pain, palpitations, nausea, unusual fatigue or lightheadedness, contact your health care provider. 	<ul style="list-style-type: none"> ▪ If symptomatic, reduce exposure to particles by following advice in box below.
Unhealthy for Sensitive Groups	Increasing likelihood of respiratory or cardiac symptoms in sensitive individuals, aggravation of heart or lung disease, and premature mortality in persons with cardiopulmonary disease and the elderly.	<p><i>Sensitive Groups:</i> People with heart or lung disease, the elderly, children, and pregnant women should limit prolonged or heavy exertion.</p> <ul style="list-style-type: none"> ▪ Limit time spent outdoors. ▪ Avoid physical exertion. ▪ People with asthma should follow asthma management plan. ▪ If you have symptoms of lung or heart disease that may be related to excess smoke exposure, including repeated coughing, shortness of breath or difficulty breathing, wheezing, chest tightness or pain, heart palpitations, nausea, unusual fatigue or lightheadedness, contact your health care provider. 	<ul style="list-style-type: none"> ▪ Keep doors and windows closed, seal large gaps as much as possible. ▪ Avoid using exhaust fans (kitchen, bathrooms, clothes dryer, and utility room). ▪ Keep the garage-to-home door closed. ▪ If cooling is needed, turn air conditioning to re-circulate mode in home and car, or use ceiling fans or portable fans (but do not use whole house fans that suck outdoor air into the home). ▪ Avoid indoor sources of pollutants, including tobacco smoke, heating with wood stoves and kerosene heaters, frying or broiling foods, burning candles, vacuuming, and using paints, solvents, cleaning products, and adhesives. ▪ Keep at least 5-day supply of medication available. ▪ Have supply of non-perishable groceries that do not require cooking.

¹ Higher advisory levels automatically incorporate all of guidance offered at lower levels.

Table 2 Health Effects and Cautionary Statements (continued)

Category (see Table 3)	Health Effects	Cautionary Statements ¹	Other Protective Actions
Unhealthy	Increased aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; increased respiratory effects in general population.	<p><i>Sensitive Groups:</i> should avoid prolonged or heavy exertion</p> <ul style="list-style-type: none"> Stay indoors; avoid exertion. <p><i>General Population:</i> should limit prolonged or heavy exertion</p> <ul style="list-style-type: none"> Limit time spent outdoors. If you have symptoms of lung or heart disease that may be related to excess smoke exposure, including repeated coughing, shortness of breath or difficulty breathing, wheezing, chest tightness or pain, palpitations, nausea or unusual fatigue or lightheadedness, contact your health care provider. 	<p><i>Sensitive Groups:</i> Stay in a “clean room” at home (where there are no indoor smoke or particle sources, and possibly an air cleaner is used).</p> <ul style="list-style-type: none"> Go to a “cleaner air” shelter (see Appendix D) or possibly out of area <p><i>General Population:</i> Follow advice for sensitive groups in box above.</p> <ul style="list-style-type: none"> Identify potential “cleaner air” shelters in the community (see Appendix D).
Very Unhealthy	Significant aggravation of heart or lung disease, premature mortality in persons with cardiopulmonary disease and the elderly; significant increase in respiratory effects in general population.	<p><i>General Population:</i> should avoid prolonged or heavy exertion</p> <ul style="list-style-type: none"> Stay indoors, avoid exertion 	<p><i>General Population:</i> If symptomatic, evacuate to cleaner air shelter or leave area, if safe to do so.</p>
Hazardous	Serious aggravation of heart or lung disease, premature mortality in persons with cardiopulmonary disease and the elderly; serious risk of respiratory effects in general population.	<p><i>General Population:</i> should avoid any outdoor activity.</p>	<p><i>General Population:</i> If symptomatic, evacuate to cleaner air shelter or leave area, if safe to do so.</p>

¹ Higher advisory levels automatically incorporate all of the guidance offered at lower levels.

Table 3. Recommended Actions for Public Health Officials^{2,3}

AQI Category (AQI Values)	PM2.5 or PM10 Levels (ug/m ³)			Visibility - Arid Conditions (miles)	Recommended Actions
	1-3hr avg	8 hr avg	24 hr avg ¹		
Good (0 to 50)	0 – 38	0 – 22	0 – 12	≥ 11	<ul style="list-style-type: none"> • If smoke event forecast, implement communication plan
Moderate (51 to 100)	39 – 88	23 – 50	12.1 – 35.4	6 – 10	<ul style="list-style-type: none"> • Issue public service announcements (PSAs) advising public about health effects and symptoms and ways to reduce exposure • Distribute information about exposure avoidance
Unhealthy for Sensitive Groups (101 to 150)	89 – 138	51 – 79	35.5– 55.4	3 – 5	<ul style="list-style-type: none"> • If smoke event projected to be prolonged, evaluate and notify possible sites for cleaner air shelters • If smoke event projected to be prolonged, prepare evacuation plans
Unhealthy (151 to 200)	139 – 351	80 – 200	55.5 – 150.4	1.5 – 2.75	<ul style="list-style-type: none"> • Consider “Smoke Day” for schools (i.e., no school that day), possibly based on school environment and travel considerations • Consider canceling public events, based on public health and travel considerations
Very Unhealthy (201 to 300)	352 – 526	201 – 300	150.5 – 250.4	1 – 1.25	<ul style="list-style-type: none"> • Consider closing some or all schools (Newer schools with a central air cleaning filter may be more protective than older, leakier homes. See “Closures”, below.) • Cancel outdoor events (e.g., concerts and competitive sports)
Hazardous (> 300)	> 526	> 300	> 250.5-500	< 1	<ul style="list-style-type: none"> • Close schools • Cancel outdoor events (e.g., concerts and competitive sports) • Consider closing workplaces not essential to public health • If PM level is projected to remain high for a prolonged time, consider evacuation of sensitive populations

¹Revised 24 hour average breakpoints from the **Revised Air Quality Standards for Particle Pollution and Updates to the Air Quality Index**, US Environmental Protection Agency, December 14, 2012. Available at <http://www.epa.gov/airquality/particlepollution/actions.html#dec12>.

²These 1- and 8-hr PM2.5 levels are estimated using the 24-hr breakpoints of the PM2.5 Air Quality Index included in the February 7, 2007 issue paper (http://www.epa.gov/airnow/aqi_issue_paper_020707.pdf) by dividing the 24-hr concentrations by the following ratios: 8-hr ratio is 0.7, 1-hr ratio is 0.4. Visibility is based on 1-hr values. If only PM10 measurements are available during smoky conditions, it can be assumed that the PM10 is composed primarily of fine particles (PM2.5), and that therefore the AQI and associated cautionary statements and advisories for PM2.5 may be used. This assumption is reflected in the column headings for Table 3.

³ Washington and Montana have developed more precautionary breakpoints, which can be found at: <http://www.deq.mt.gov/FireUpdates/BreakpointsRevised.asp> and <http://www.ecy.wa.gov/programs/air/pdfs/WAQA.pdf>